# \*88094\*

Vork Order ID 88094

July-25-12 4:03:01 PM

Item, ID: Revision ID:	D412-664-203		``	Α	ccept	*N900	040	100	)*	Setup St	art 🛪	VS1*
_	Crosstube Aft	•		<del>-</del> .						St	top 🛧	<b>VS2*</b>
Start Date: Required Date: Reference:		art Qty: 1.00 eq'd Qty: 1.00	*1 *1		,	Cust Item I Customer:	ID:					
Approvals:	Process Plan:	ИГД	Date: \?	-	Tooling:  SPC (Y/N):		ate:		1		top *	NR1* NR2*
Sequence ID/ Work Center II		peration scription			Set Up/V	Tool ID	Tool #	Plan Code	- Accept Qty	Reject Qty	Rejec Numb	_
Draw Nbr	Revisio	n Nbr						, , , , , , , , , , , , , , , , , , , ,				
D412-664-243	E/DEO	!		0							•	2
*1 \\n\* DC.  Document Control	D0	OCUMENT CONTRO  Memo Photocopy h		ahels as m	0.00 0.00 (DAC) 16 5r PPP D412-664-203 GH	7/04/79	\ <u>C</u>			MLJ	- 121	08/27
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Packaging Packaging		Memo			0.00		9	, 0		<u> </u>	<u> </u>	
120 * <b>120</b> *	BE	ENDING MACHINE -	CROSSTUBES		0.00		MO/	/  }	- 1 .	2/8/1	21	
CNC Bend 2	1	Memo			0.00		/ }	$\leq M$		-10/1	<del></del>	
CNC Alpha 160 Ber	nder A TO	Bend tube a		64 <b>-</b> 243 us	ing CNC bender program	412-aft and						

NCR: Yes / No

## WORK ORDER NON-CONFORMANCE / UPDATE

DQA: 12/03/30

						-		the second		QA Closed:	4 Date	:
Work Order	: <b>%</b> (	394		•	DISPOSITION		**		AGAINST D	EPARTMENT	/PROCESS	
	D4	12-bd		03:	Rework Scrap Use-as-is Work Order Update			Skid-tube Machining noforming Large-Pab	Crosstube v \$mall.Fab Finishing Composite	. Pro	Water Jet d. Eng. Coor. re/Packaging Supplier	Engineering Quality Other
Root	<u> </u>			Descri	ption of work order update	1	nitial ``	Acti	ion	Sign &		;
Cause	Date	Step	Qty.	i	or Non-conformance	1 .	ief Eng	2 <sup>5</sup> Descri	•	Date	Verification	• QC Inspector
Doc/Data Cquip/Tooling Operator Material	16/2/14	.120					D. 6		• • •	( De 0	10	- DAS 16 26 26414
Setup Other Process Supplier				BEND	SHING IS OVER PANE AFTER		ry NA	o jjoky ig A		12/4/14		(20914
Training Unapproved		1									\$ 1000 m	
		•	•	1	, F	AUL	T CATE	GORY				
Landing	Gear Bending Centre No	ot Concer	itric to	D/S	General Bend BOM/Route		Grain Hardwa	re ့.	5	Ovalized Over/Under	tolerance	Pressure/Forced Temperature/Cure
	Cracks				Broken/Damaged		Inspecti	on Incomplete	7	Part Incorre	ct 🧍	Weld
	Crushed/0	Crimped.		•	Burrs		Instruct	ions Incomplete/U	Inclear	Part Lost/Mi	issing	Wrong Stock Pulled
<u> </u>	Cuffs				Contamination		Mainte	nance		Part Moved	ž	
	Heat Trea	t			Countersink		Mislabe	led	- 13° - 12°	Positioned V	Vrong 📜	
	Inspection	n Strip in	Tube		Cut Too Short		Misread	l	•	Power Loss/	Surge 📜	Other
	Ripples in	Bend .			Drill Holes		Offset	•	_			
	Torque W		xtrusio	ı	Drawing		Out of 0	Calibration				
_	Turning Se	equénce			Finish		Out of S	equence	•			
	Wave/Tw	ist in Tub	e		Folio		Outside	Dimensions			•	

## Work Order ID 88094

D412-664-203 Item ID: Accept \*N900040100\* Setup Start **Revision ID:** Item Name: Crosstube Aft 25/07/2012 **Start Date:** Start Oty: 1.00 **Cust Item ID:** Req'd Qty: 1.00 **Required Date:** 15/08/2012 **Customer:** Reference: Run Date: Approvals: **Process Plan:** Tooling: Date: Stop SPC (Y/N): Date: Sequence ID/ Operation Set Up/ Tool ID Tool # Plan Accept Reject Reject Work Center ID **Description Run Hours** Code Qty Qty

130

QC

Quality Control

QC15- Crosstube Dimensional Check

Memo

0.00

0.00

Number Stamp

Insp.

140 \*1*1*10\*

Crosstubes

Crosstubes

Crosstubes

Memo

1-Drill pilot holes in tube as per Dwg D412-664-243 using drill Jig DT8550 & DT8551 and drill table DT8577 using #9 holes as per QSI 10 to install towers.

2-Ream hole to finish size in tube as per Dwg D412-664-243using drill Jig DT8550 & DT8551. Check dimensions between holes, both sides on both cuffs, to ensure alignment with saddle holes.

3-SCRIBE PART # & BATCH #

4- \*\*\* WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE\*\*\* Deburr & Inspect for surface damage. Repair damage within limits as per Dwg D412-664-243

NCR: '	Yes	/ No				WORK ORDER NON-C	COI	NFORI	MANCE / UPI	DATE			
											QA Closed:	Date:	. ,
Work Ord	er:					DISPOSITION				AGAINST DE	PARTMENT	/PROCESS	(
Part I	_ No					Rework Scrap Use-as-is Work Order Update			Skid-tube  Machining  noforming  Large Fab	Crosstube Small Fab Finishing Composite	4	Water Jet d. Eng. Coor. re/Packaging Supplier	Engineering Quality Other
Root	T				Descri	ption of work order update		nitial	Act	ion	Sign &		
Cause		Date	Step	Qty	C	or Non-conformance	Ch	ief Eng	Descr	ription	Date	Verification	QC Inspector
Doc/Data													
Equip/Tooling	Ш												
Operator	Ш												
Material	Ш												
Setup	Ш							1. 7. 7					
Other	Н	:						AAAA					
Process	Н						ļ	~ ~					
Supplier Training	H												
Unapproved	H												
опаррточеа				!		F	Διι	T CATE	GORY		l		
Landi	ng Ge	ear				General		0, (1)					
		Bending				Bend		Grain			Ovalized		Pressure/Forced
		entre No	t Concer	ntric to (	D/S	BOM/Route		Hardwa	ire		Over/Under	tolerance	Temperature/Cure
		Cracks				Broken/Damaged		Inspect	ion Incomplete		Part Incorre	ct	Weld
		Crushed/0	Crimped.			Burrs		Instruct	ions Incomplete/U	Jnclear	Part Lost/Mi	ssing	Wrong Stock Pulled
		Cuffs				Contamination		Mainte	enance		Part Moved		•
	Ш⁺	leat Trea	t			Countersink		Mislabe	eled		Positioned V	Vrong	_
	_	nspection		Tube		Cut Too Short		Misread	t		Power Loss/	Surge	Other
	—	Ripples in				Drill Holes		Offset					
		orque W		xtrusior	١	Drawing		Out of (	Calibration				
	T	urning Se	equence			Finish	1	Out of 9	Sequence				

Out of Sequence

Outside Dimensions

DQA:

Date:

Wave/Twist in Tube

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

July-25-12 4:03:01 PM

Item ID:

D412-664-203

Accept

\*N900040100\*

Setup Start

**Revision ID:** 

Item Name: Crosstube Aft

**Required Date:** 15/08/2012

**Start Date:** 

25/07/2012

Start Oty: 1.00 Req'd Qty: 1.00

**Cust Item ID:** 

**Customer:** 

Reference:

**Approvals:** 

Process Plan:

Date:

**Tooling:** 

Date:

Run

Reject

Qty

QC:

SPC (Y/N): Date:

Date:

Stop

Sequence ID/ Work Center ID

Operation Description Set Up/ **Run Hours**  Tool ID

Tool # Plan Code Accept Qty

Reject

Insp. Number Stamp

160

QC5- Inspect part completeness to step on W/O

0.00

\*160\* QC Quality Control

\*\*\* WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE\*\*\*

170

\*170\*

HandFXtube

Memo

Memo

0.00

0.00

Hand Finishing Crosstubes

\*\*\* WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE\*\*\*

1- CLEAN CROSSTUBE WITH WASH'N WIPE

180

Outsource process - NDT per QSI038 4.1

0.00

\*180\*

Outsource2

Memo

0.00

Outsource process - NDT

\*\*\* WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE\*\*\*

Liquid Penetrant Inspection as per QSI 038Or Issue P/O: <u>17693</u> LPI as per ASTM 1417 Level 2 Attach copy of NDT results to work order

CX 12 1021150

NCR:	Yes	/ No				WORK ORDER NON-	·CO	NFORM	MANCE / UPI	DATE			•
											QA Closed:	Date:	
Work Ord	er: _			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		DISPOSITION	_			AGAINST DE	PARTMENT	/PROCESS	
Part I	•					Rework Scrap Use-as-is Work Order Update			Skid-tube  Machining  noforming  Large Fab	Crosstube Small Fab Finishing Composite	4	Water Jet d. Eng. Coor. re/Packaging Supplier	Engineering Quality Other
Root					Descri	ption of work order update		Initial	Act	ion	Sign &		
Cause		Date	Step	Qty		or Non-conformance	CI	nief Eng	Descr	iption	Date	Verification	QC Inspector
Doc/Data Equip/Tooling Operator Material Setup Other Process Supplier Training Unapproved							FAU	LT CATE	GORY				
Landi	ng G	ear				General							
		Bending Centre No Cracks Crushed/ Cuffs Heat Trea Inspection Ripples in	Crimped. et n Strip in Bend	Tube		Bend BOM/Route Broken/Damaged Burrs Contamination Countersink Cut Too Short Drill Holes		Instruct Mainte Mislabe Misread Offset	ion Incomplete ions Incomplete/L enance eled	Jnclear	Ovalized Over/Under Part Incorre Part Lost/M Part Moved Positioned V Power Loss/	ct sissing Vrong	Pressure/Forced Temperature/Cure Weld Wrong Stock Pulled Other
	1 1	Torque W	laves in F	etrusio	n 1	Drawing	- 1	10ut of 0	Calibration				

Out of Sequence

Outside Dimensions

DQA:

Date:

Turning Sequence

Wave/Twist in Tube

Finish

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

Page 4

July-25-12 4:03:01 PM

Item ID: Revision ID: Item Name:	D412-664-20 Crosstube Aft			Accept	*N900				etup Start	I XI	S1*
Start Date: Required Date: Reference:	25/07/2012	Start Qty: 1.00 Req'd Qty: 1.00	*1* *1*		Cust Item   Customer:	ID:			·	"IN	5/"
Approvals:	Process Pla	ın:	Date:	Tooling:	D	ate:		F	Run Star Stop	1/1	R1*
	QC:		Date:	_ SPC (Y/N):	D	ate:			5.01	*N	R2*
Sequence ID/ Work Center II	D	Operation Description		Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
190 <b>*100*</b> Packaging		Packaging <b>Memo</b>		0.00				/-X			80
Packaging		*** WEAR	LATEX GLOVES WHEN transit damage y of NDT results attached	N HANDLING CROSSTUBE to work order.	***						12-8
<sup>200</sup> *200*		QC5- Inspect part comp	leteness to step on W/O	0.00				ì			$\int_{-\infty}^{\infty}$
QC		Memo		0.00							MI ja,
Quality Control		*** WEAR	LATEX GLOVES WHE	N HANDLING CROSSTUBE	***						
		Inspect for	damage & ensure results a	are as per Dwg D412-664-203							
203				0.00							
*203* HandFXtube		Memo		0.00				Boy	12	-8-	15
Hand Finishing Cro	sstubes		LATEX GLOVES WHE	N HANDLING CROSSTUBE	***						

1- PRESSURE WASH AND THEN USE WASH'N WIPE TO CLEAN CROSSTUBE BEFORE CHEMICAL CONVERSION

										QA Closed	l: Date	e: * '
er:					DISPOSITION				AGAINST D	EPARTMEN	T/PROCESS	
10 10					Rework Scrap Use-as-is Work Order Update		Therm	Machining of orming of orming of orming of the orming of t	Crosstube Small Fab Finishing Composite	_		Engineering Quality Other
				Descri	ption of work order update	T	Initial	Act	ion	Sign &		
	Date	Step	Qty	(	or Non-conformance	Ch	nief Eng	Descr	ription	Date	Verification	QC Inspector
						AUL	T CATE	GORY				
	Bending Centre No Cracks Crushed/ Cuffs Heat Trea Inspection	Crimped, it n Strip in i Bend	Tube	/s	Bend BOM/Route Broken/Damaged Burrs Contamination Countersink Cut Too Short Drill Holes		Inspecti Instruct Mainte Mislabe Misread Offset	on Incomplete ions Incomplete/U nance led	Jnclear	Part Incorr Part Lost/N Part Move Positioned	ect Missing d Wrong	Pressure/Forced Temperature/Cure Weld Wrong Stock Pulled  Other
	ng G	Date  Date  Gear  Bending  Centre No  Cracks  Crushed/ Cuffs  Heat Trea Inspection Ripples in	Date Step  Date Step	Date Step Qty  Date Step Qty  Gear  Bending  Centre Not Concentric to O  Cracks  Crushed/Crimped  Cuffs  Heat Treat  Inspection Strip in Tube  Ripples in Bend	Date Step Qty  Description  Date Step Qty  Gear  Bending  Centre Not Concentric to O/S  Cracks  Crushed/Crimped.  Cuffs  Heat Treat  Inspection Strip in Tube  Ripples in Bend	Rework Scrap Use-as-is Work Order Update  Date Step Qty Description of work order update or Non-conformance  Bending Centre Not Concentric to O/S BoM/Route Broken/Damaged Burrs Cushed/Crimped. Cuffs Heat Treat Inspection Strip in Tube Ripples in Bend Drill Holes	Rework Scrap Use-as-is Work Order Update  Date Step Qty Description of work order update or Non-conformance Chapter Step Qty Or Non-confor	Rework Scrap Use-as-is Work Order Update Date Step Qty Or Non-conformance Chief Eng    Date   Step Qty   Description of work order update or Non-conformance   Chief Eng	Rework Scrap Use-as-is Machining Thermoforming Large Fab  Date Step Qty Or Non-conformance Chief Eng Description of work order update or Non-conformance Chief Eng Description of Work Order Update Step Qty Or Non-conformance Chief Eng Description of Work Order update or Non-conformance Chief Eng Description of Work order update or Non-conformance Chief Eng Description of Work order update or Non-conformance Chief Eng Description of Work order update or Non-conformance Chief Eng Description Or Non-conformance Chief Eng Descri	Rework Scrap Use-as-is Work Order Update Use-as-is Use-as-is Vorder Update Update Update Update Update Update Use-as-is Vorder Update	Rework Scrap Use-as-is Work Order Update Use-as-is Work Order Update Use-as-is Use-as-is Work Order Update Use-as-is	Rework Scrap Use-as-is Work Order Update Update Date Step Qty Or Non-conformance Chief Eng Description Date Step Qty Or Non-conformance Chief Eng Description Date Verification    Date   Step Qty   Description of work order update or Non-conformance   Chief Eng Description   Date   Verification

Out of Sequence

Outside Dimensions

DQA:

Date:

Turning Sequence

Wave/Twist in Tube

Finish

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

SPC (Y/N): Date: Date: Reject Reject Insp. Sequence ID/ Accept Operation Set Up/ Tool ID Tool # Plan Code Qty Qty Stamp Work Center ID Description Number **Run Hours** 205 QC7-Inspect Chemical Conversion Coat 0.00 \*205\*

Page 5

Stop

Memo

Quality Control \*\*\* WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE\*\*\*

												DQA:	Dat	te:	
NCR:	Yes	/ No				<b>WORK ORDER NON-</b>	COI	NFORM	ANCE / UP	DATE				_	•
									•		QA CI	osed:	Dat	te:	
Work Ord	er:					DISPOSITION			•	AGAINST DE	PARTI	ΛENT,	/PROCESS		١.
Part I NCR I	- No					Rework Scrap Use-as-is Work Order Update		Therm	Skid-tube  Machining noforming  Large Fab	Crosstube Small Fab Finishing Composite	Re		Water Jet d. Eng. Coor. re/Packaging Supplier		Engineering Quality Other
Root					Descri	ption of work order update		Initial	Ac	tion	Sign	1 &			
Cause		Date	Step	Qty		or Non-conformance	Cł	nief Eng	Desc	ription	Da	ite	Verification	1	QC Inspector
Doc/Data Equip/Tooling Operator Material Setup Other Process Supplier Training Unapproved															
							AUI	LT CATE	GORY				<u></u>		
Landi		Bending Centre No Cracks Crushed/O Cuffs Heat Trea Inspection	Crimped. t n Strip in		O/S	General Bend BOM/Route Broken/Damaged Burrs Contamination Countersink Cut Too Short		Instruct Mainte Mislabe Misread	on Incomplete ions Incomplete/ nance led	'Unclear	Part In Part L Part N Position	Under ncorre ost/M Moved oned V	issing		Pressure/Forced Temperature/Cure Weld Wrong Stock Pulled Other
		Ripples in	Bend		1	Drill Holes		Offset							•

Out of Calibration

Out of Sequence

Outside Dimensions

Turning Sequence

Wave/Twist in Tube

Torque Waves in Extrusion

Drawing

Finish

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

July-25-12 4:03:01 PM

**Required Date:** 15/08/2012

Item ID:

D412-664-203

Accept

\*N900040100\*

Setup Start

**Revision ID:** 

**Start Date:** 

Item Name:

Crosstube Aft 25/07/2012

Start Qty: 1.00

**Req'd Qty:** 1.00

Date:\_\_\_\_\_

**Cust Item ID:** 

**Customer:** 

Reference:

Approvals:

**Process Plan:** 

Date:

**Tooling:** 

SPC (Y/N):

Date: Date: Run Start

Stop

Sequence ID/ **Work Center ID**  Operation Description

SprayPaint

Set Up/ **Run Hours**  Tool ID

Plan Tool# Code Accept **Qty** 

Reject **Qty** 

Reject

Al 12-8-16

Insp. Number Stamp

210

\*210\*

SprayPaint

0.00

0.00

**Spray Painting** 

\*\*\* WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE\*\*\*

1-Prime inside and outside crosstube as per QSI 005 4.2

2-Paint outside crosstube with White Imron as per DEO D412-664-243 and QSI 005 4.2

PRIME: 121746 Start Time: 8:00 Fininsh Time: 8:45
PAINT: 122381 Start Time: 4',15 Finish Time: **5!00** 

<sup>\*\*\*</sup>Mask underside of crosstube as shown\*\*\*

<sup>3-</sup> Apply clear coat after paint as per DEO

NCR:	Yes	/ No				WORK ORDER NON-C	COI	NFORI	MANCE / UPI	DAIE			
								<u>.</u>			QA Closed:	Date:	
Work Ord	er:					DISPOSITION				AGAINST DE	PARTMENT	/PROCESS	t
Part 1	•					Rework Scrap			Skid-tube Machining	Crosstube Small Fab	Pro	Water Jet d. Eng. Coor.	Engineering Quality
NCR I	No.					Use-as-is Work Order Update		Thern	noforming Large Fab	Finishing Composite	Rec/Sto	re/Packaging Supplier	Other
Root					Descri	ption of work order update		Initial	Act	tion	Sign &		
Cause		Date	Step	Qty	(	or Non-conformance	Ch	nief Eng	Descr	ription	Date	Verification	QC Inspector
Doc/Data													
Equip/Tooling													
Operator	Ш												
Material	Ш							٠ ﴿					
Setup													
Other	Ш												
Process													
Supplier													
Training	Щ												
Unapproved				<u> </u>							<u>l</u>		
							AUL	T CATE	GORY				
Landi		1			_	General		7		_	7		1
	-	Bending				Bend		Grain		_	Ovalized		Pressure/Forced
	-	Centre No	ot Concer	ntric to	o/s	BOM/Route	<u></u>	Hardwa		<u> </u>	Over/Under	<del>-</del>	Temperature/Cure
	-	Cracks				Broken/Damaged	<u></u>	1 .	ion Incomplete	.	Part Incorre	<b>├</b>	Weld
	$\vdash$	Crushed/	Crimped.			Burrs	<u> </u>	4	ions Incomplete/U	Jnclear	Part Lost/M		Wrong Stock Pulled
	$\vdash$	Cuffs			_	Contamination		Mainte			Part Moved		
	$\vdash$	Heat Trea				Countersink	_	Mislabe		<u></u>	Positioned \	_	7
	_	Inspection		Tube		Cut Too Short	$\vdash$	Misread	i		Power Loss/	'Surge	Other
	$\vdash$	Ripples in			<u> </u>	Drill Holes		Offset					
	_	Torque W			n	Drawing	<b>—</b>	4	Calibration				
	ı	Turning S	equence			Finish	1	Out of 9	Sequence				

Outside Dimensions

DQA:

Date:

Wave/Twist in Tube

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

Page 7

July-25-12 4:03:01 PM

Item ID:

D412-664-203

Accept

\*N900040100\*

Setup Start

**Revision ID:** 

**Start Date:** 

Item Name:

Crosstube Aft 25/07/2012

Start Qty: 1.00 Req'd Qty: 1.00

Date:

**Cust Item ID:** 

**Customer:** 

Reference:

**Approvals:** 

**Required Date:** 15/08/2012

Process Plan:

QC:

Date:

**Tooling:** 

Date:

Date:

Run

Qty

Stop

Sequence ID/ **Work Center ID**  Operation **Description**  Set Up/ **Run Hours**  **Tool ID** 

Tool# Plan

Code

Accept **Qty** 

Reject Reject Number

Insp. Stamp

220

QC14- Inspect Spray Paint

SPC (Y/N):

\*220\*

Memo

Quality Control

Then, Wrap in plastic bag to protect from scratches

230

\*230\* Crosstubes

Crosstubes

Memo

0.00

0.00

Crosstubes

Assemble as per Dwg D412-664-203

A/R Proseal 890 Batch: 12244/ EXP: 1/13

& INSTRUCTION

2- Lightly scuff the bonded area using a 320 grit sand paper and clean the area with 41058 wash 'n' wipe

1- Install chafing shield as per DEO D412-664-243. Top holes should be facing

3-Install support with Scotch-Weld DP460 and install clamps as per DEO Dwg D12-664-243 using installation jig DT9024. Torque clamps as per dwg Scotch-Weld DP460 Batch: 121368

12-8-26

											DQA:	Date:	
NCR:	Yes	/ No				<b>WORK ORDER NON-</b>	100	NFORM	MANCE / UP	DATE		· · · · · · · · · · · · · · · · · · ·	,
									•		QA Closed:	Date:	
Work Ord	er:					DISPOSITION				AGAINST DE	PARTMENT	/PROCESS	٠
Part I						Rework Scrap Use-as-is Work Order Update		f Therm	Skid-tube Machining noforming Large Fab	Crosstube Small Fab Finishing Composite	-1	Water Jet d. Eng. Coor. re/Packaging Supplier	Engineering Quality Other
Root					Descri	tion of work order update		Initial	۸۵	tion	Sign &		<u> </u>
Cause		Date	Step	Qty		or Non-conformance		ief Eng	_	ription	Date	Verification	QC Inspector
Doc/Data		Dute	Step	Qty		or real comorniance		iici Eiig	<i>D</i> C 3 C	ption	Dute	Vermeation	QC HISPECTOI
Equip/Tooling			1			•							
Operator													
Material					-								
Setup								$A_{i} > 1$					
Other						e .		18 ×					
Process								·*					
Supplier													
Training													
Unapproved													
						F	AUL	T CATE	GORY				<u> </u>
Landi	ng (	Gear	•			General					•		
		Bending				Bend		Grain			Ovalized	•••	Pressure/Forced
		Centre No	ot Concer	ntric to	o/s	BOM/Route		Hardwa	re		Over/Under	tolerance	Temperature/Cure
		Cracks				Broken/Damaged		Inspecti	on Incomplete		Part Incorre	ct	Weld
		Crushed/	Crimped.			Burrs		Instruct	ions Incomplete/	'Unclear	Part Lost/M	issing	Wrong Stock Pulled
		Cuffs				Contamination	Г	Mainte	nance .		Part Moved	<del></del>	•
		Heat Trea	t			Countersink		Mislabe	led		Positioned V	Vrong	
ı		Inspection	n Strip in	Tube		Cut Too Short		Misread	1		Power Loss/	Surge	Other

Offset

Out of Calibration

Out of Sequence

Outside Dimensions

Turning Sequence

Wave/Twist in Tube

Ripples in Bend

Torque Waves in Extrusion

Drill Holes

Drawing

Finish

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

July-25-12 4:03:01 PM

\*N900040100\* Item ID: D412-664-203 Accept Setup Start **Revision ID: Item Name:** Crosstube Aft Start Qty: 1.00 25/07/2012 **Start Date: Cust Item ID: Req'd Qty:** 1.00 **Required Date:** 15/08/2012 **Customer:** Reference: Run Process Plan: \_\_\_\_\_ Date: **Tooling:** Approvals: Date: Stop SPC (Y/N): Date: Date: Sequence ID/ Set Up/ **Tool ID** Tool # Plan Reject Reject Insp. Operation Accept Work Center ID **Qty** Qty Number Stamp Description **Run Hours** Code 240 QC5- Inspect part completeness to step on W/O 0.00 finspector DEO 412-664-243-E-4 \*240\* Memo Quality Control 16 17/08/27 250 Pick Kit 0.00 \*250\* Packaging 0.00 Memo Packaging QC4-100% Inspect kits for completeness 260 0.00 0.00 Memo Quality Control

NCR:	Yes	/ No				WORK ORDER NON-	COI	NFORI	MANCE / UP	DATE			•
											QA Closed:	Date:	•
Work Ord	er:					DISPOSITION				AGAINST DE	PARTMENT	/PROCESS	•
Part I	No.					Rework Scrap Use-as-is Work Order Update		E	Skid-tube  Machining  noforming  Large Fab	Crosstube Small Fab Finishing Composite	-1	Water Jet d. Eng. Coor. re/Packaging Supplier	Engineering Quality Other
			·	· · · · · · · · · · · · · · · · · · ·								,	·
Root						ption of work order update	1	Initial		tion	Sign &		
Cause	_	Date	Step	Qty		or Non-conformance	Cr	nief Eng	Desc	ription	Date	Verification	QC Inspector
Doc/Data Equip/Tooling Operator Material Setup Other Process Supplier Training Unapproved						-0 gh							
						F	AUL	T CATE	GORY		•		
Landi	ng G	Gear				General		_					
		Bending Centre No Cracks Crushed/ Cuffs Heat Trea Inspectio Ripples in Torque W	Crimped. at n Strip in i Bend /aves in E	Tube		Bend BOM/Route Broken/Damaged Burrs Contamination Countersink Cut Too Short Drill Holes Drawing		Instruct Mainte Mislabe Misread Offset Out of (	ion Incomplete tions Incomplete/I enance eled d Calibration	Unclear	Ovalized Over/Under Part Incorre Part Lost/M Part Moved Positioned V	ct sissing Vrong	Pressure/Forced Temperature/Cure Weld Wrong Stock Pulled Other
		Turning S	equence		- 1	Finish	1	Out of S	Sequence				

Outside Dimensions

Date:

DQA:

Wave/Twist in Tube

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

Page 9

July-25-12 4:03:01 PM Item ID: D412-664-203 Accept \*N900040100\* Setup Start **Revision ID:** Item Name: Crosstube Aft **Start Date:** 25/07/2012 Start Qty: 1.00 **Cust Item ID: Required Date:** 15/08/2012 **Req'd Qty:** 1.00 **Customer:** Reference: Run **Approvals:** Process Plan: Date: Tooling: Date: Stop SPC (Y/N): Date: Date:\_\_\_\_\_ Sequence ID/ Operation Set Up/ Tool ID Tool # Plan Accept Reject Reject **Work Center ID** Qty Description **Run Hours** Code **Qty** Number Stamp 270 0.00 Packaging

\*270\*

Packaging

Packaging

Memo Identify and pack for shipping as per PPP D412-664-203

\*\*\*\*\*\*Ensure tube is not packaged if curing time is less than 12 hrs, see step 27

for application time & date \*\*\*\*\*\*

Time & date of packaging:

Location:

280

QC21- Final Inspection - Work Order Release

0.00

0.00

\*280\*

Quality Control

Memo

0.00

MLJ 12/08/29 MLJ 12/08/29

Insp.

Work Order:  Part No.  Part No.  NCR No.  Root Cause Date Date Date Date Date Date Date Dat	•
Work Order:  Part No.  Part No.  Scrap Use-as-is NCR No.  Work Order Update  Rework Skid-tube Crosstube Machining Small Fab Prod. Eng. Co. Thermoforming Large Fab Composite Suppl  Root Cause Date Step Qty Or Non-conformance Chief Eng Description Date Verifica	Date: .
Rework Skid-tube Crosstube Prod. Eng. Co. Use-as-is NCR No.    NCR No.	ss '
Cause     Date     Step     Qty     or Non-conformance     Chief Eng     Description     Date     Verification       Doc/Data     Equip/Tooling     Equip/Tooling<	coor. Quality ging Other
Doc/Data Equip/Tooling	
Equip/Tooling Equip/Tooling	cation QC Inspector
Material Setup Other Process Supplier Training Unapproved Unapproved	
FAULT CATEGORY  Landing Gear General	
Bending	Pressure/Forced Temperature/Cure Weld Wrong Stock Pulled Other

Out of Sequence

Outside Dimensions

DQA:

Date:

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

Turning Sequence

Wave/Twist in Tube

Finish

### Picklist Print

July-25-12 4:03:05 PM

Work Order ID: 88094

Parent Item:

D412-664-203

Parent Item Name: Crosstube Aft

\*88094\*

\*D412-664-203\*

**Start Date: 25/07/2012** 

**Required Date: 15/08/2012** 

Page 1

Start Qty: 1.00

Required Qty: 1.00

**Comments:** 

IPP Rev:E04.02.16Reformat; Added D3189-1K/DS

Remove Coments on Pick List JLM IPP Rev:F 06-03-29 IPP Rev:G 06.12.08 per ECN 886 EC IPP Rev:H 07-04-30 As per Rev D JLM

IPP Rev:I 08-06-12 add comment in seq. 21 DD verified by:EC IPP rev J

11.04.21 DEO D412-664-243-E-1 EC verified DD

IPP REV:K

11.10.03 DEO D412-664-243-E-2 DD verf:EC

	2202												
Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	-	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
D412-664-203TRN	<del></del>	Manufactured	No			110	Each	6.0000	1	1			
*D412-664 Crosstube Turning Detail	4-203TF	SN*							**		·		
				<u>Location</u> LG	88789	Loc	<u><b>Qty</b></u> 6	Loc Code	_	0	_	Mo	12/8/
					83835		1		_		_		
					87155		1		_				
					87156		1		_		_		
					87157		i		_		_		
					87158		1				_		
					87160		1		_		_		
D2896-1		Manufactured	No			230	Each	16.0000	1	1			
*D2896-1	*								**		AR	12-1	8-26
				Location		Loc	Otv	Loc Code					

Location	Loc Qty	Loc Code
LG052	8	
80586	8	
LG053	8	
74465	8	

											DQA:	Date:	
NCR:	Yes	/ No				WORK ORDER NON-C	100	NFORM	/ANCE / UPI	DATE			
											QA Closed:	Date:	. ,
Work Orde	er:					DISPOSITION				AGAINST DE	PARTMENT	/PROCESS	•
Part f	. No.					Rework Scrap Use-as-is Work Order Update		t Therm	Skid-tube  Machining noforming  Large Fab	Crosstube Small Fab Finishing Composite	Water Jet Engineerin Prod. Eng. Coor. Quali Rec/Store/Packaging Oth Supplier		
Root					Descri	ption of work order update	١	Initial	Act	ion	Sign &		
Cause		Date	Step	Qty	c	or Non-conformance	Ch	ief Eng	Descr	ription	Date	Verification	QC Inspector
Doc/Data Equip/Tooling Operator Material Setup Other Process Supplier Training Unapproved													
							AUL	T CATE	3ORY	····			
Landi		Bending Centre No Cracks Crushed/C Cuffs Heat Trea Inspectior	Crimped. t n Strip in		o/s	General Bend BOM/Route Broken/Damaged Burrs Contamination Countersink Cut Too Short		Instruct Mainte Mislabe Misreac	on Incomplete ions Incomplete/U nance Ied	Jnclear	Ovalized Over/Under Part Incorre Part Lost/M Part Moved Positioned N	ct issing Vrong	Pressure/Forced Temperature/Cure Weld Wrong Stock Pulled Other
	l	Ripples in	Bend			Drill Holes		Offset					

Out of Calibration

Out of Sequence

Outside Dimensions

Turning Sequence

Wave/Twist in Tube

Torque Waves in Extrusion

Drawing

Finish

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

#### **Picklist Print**

July-25-12 4:03:06 PM

Work Order ID: 88094

D412-664-203

Parent Item: Parent Item Name: Crosstube Aft

\*88094\*

\*D412-664-203\*

**Start Date: 25/07/2012** 

**Required Date: 15/08/2012** 

Start Qty: 1.00

Required Qty: 1.00

D3189-1

\*D3189-1\*

Chafing Shield

Manufactured No

Manufactured

No

230

Each

23.0000

\*\*

12-8-26

89431 Loc Qty **Location** FG 36065 LG053 19 83458 6 85515 13 230 Each

139.0000

Loc Code

2

0

D3595-063-570

RUBBER CUSHION

\*\*

Location	Loc Qty	Loc Code	
FG	8		· .
37971	1		
42243	7		
LG	78		
83294	78		
MAT052	53		
71534	1		
76546	52		_@

NCR:	Yes	/ No				WORK ORDER NON-O	COI	NFORM	MANCE / UP	DATE			. '
											QA Closed:	Date	:
Work Ord	er:					DISPOSITION				AGAINST DE	PARTMENT	/PROCESS	•
Part NCR	No.					Rework Scrap Use-as-is Work Order Update		Thern	Skid-tube  Machining  noforming  Large Fab	Crosstube Small Fab Finishing Composite	4	Water Jet d. Eng. Coor. re/Packaging Supplier	Engineering Quality Other
Root			1		Doscri	ption of work order update	, i	Initial	Λ α	tion	Cian 0		T
Cause		Date	Step	Qty		or Non-conformance	l l	nief Eng		ription	Sign & Date	Verification	QC Inspector
Doc/Data		Date	Step	Qty		or Non-comormance	-	Her Eng	Desci	ription	Date	vernication	QC IIIspector
Equip/Tooling	H												
Operator	Н						1						
Material	$\Box$												
Setup	П												
Other	Н	-											
Process						•							
Supplier	П												
Training	П												
Unapproved	П												
				•		F	AUL	T CATE	GORY				
Landi	ng G	ear				General							
		Bending				Bend		Grain			Ovalized		Pressure/Forced
		Centre No	ot Concer	ntric to	o/s	BOM/Route		Hardwa	re		Over/Under	tolerance	Temperature/Cure
	Ш	Cracks				Broken/Damaged		Inspecti	on Incomplete		Part Incorre	ct	Weld
		Crushed/	Crimped.			Burrs		Instruct	ions Incomplete/I	Unclear	Part Lost/M	issing	Wrong Stock Pulled
	Ш	Cuffs				Contamination		Mainte	nance		Part Moved		
	Ш	Heat Trea	t			Countersink		Mislabe	led		Positioned V	Vrong	_
	Ш	Inspection	n Strip in	Tube		Cut Too Short		Misread	I		Power Loss/	Surge	Other
	Ш	Ripples in	Bend			Drill Holes		Offset					
		Torque W	aves in E	xtrusion	1	Drawing		Out of C	Calibration				

Out of Sequence

Outside Dimensions

DQA:

Date:

Turning Sequence

Wave/Twist in Tube

Finish

July-25-12 4:03:06 PM

Work Order ID: 88094

D412-664-203

Parent Item:

MS21920-28

Parent Item Name: Crosstube Aft

\*88094\*

\*D412-664-203\*

\*\*

Start Date: 25/07/2012

Start Qty: 1.00

Required Oty: 1.00

**Required Date: 15/08/2012** 

# 12-8-26

\*MS21920-28\*

Clamp(per MIL-DTL-8783C)

Location	Loc Oty	Loc Code	
FG	5		_
105884	5		_
LG050	55		_
118713	3		_
120054	2		_
122518	50		-
LG051	42		
121440	8		_

34

Each

Each

230

MS21920-30

AN6-40A

clamp(per MIL-DTL-8783C)

Purchased

No

No

No

Purchased

Purchased

122204

87.0000

102.0000

2 \*\*

12-8-26

Loc Code Location Loc Qty LG 24 119529 24 LG051 63 111258 14 121583 49 250 142.0000 Each

230

\*\*

Location Loc Qty Loc Code ST340 50 122416 50 ST342 92 66 120187 120833 4 22 121827

<u>a</u>

											DQA:	Date:	
NCR:	Yes	/ No				WORK ORDER NON-	COI	NFORM	MANCE / UPD	ATE			•
										·	QA Closed:	Date:	
Work Ord	er:					DISPOSITION				AGAINST DE	PARTMENT	/PROCESS	
Part f	No.					Rework Scrap Use-as-is Work Order Update		l Therm	Skid-tube  Machining  noforming  Large Fab	Crosstube Small Fab Finishing Composite	i	Water Jet d. Eng. Coor. re/Packaging Supplier	Engineering Quality Other
Root					Descri	ption of work order update		Initial	Acti	on	Sign &		
Cause		Date	Step	Qty	C	or Non-conformance	Ch	nief Eng	Descri	iption	Date	Verification	QC Inspector
Doc/Data													
Equip/Tooling	Ш												
Operator							1						
Material													
Setup													
Other													
Process													
Supplier													
Training		•					1						
Unapproved													
						F	AUI	T CATE	GORY		•	•	
Landi	ng C	Gear				General							
		Bending				Bend		Grain			Ovalized		Pressure/Forced
		Centre No	t Concer	ntric to (	o/s	BOM/Route		Hardwa	re		Over/Under	tolerance	Temperature/Cure
		Cracks				Broken/Damaged		Inspecti	on Incomplete		Part Incorre	ct	Weld
		Crushed/0	Crimped.			Burrs		i '	ions Incomplete/U	nclear	Part Lost/Mi	ļ	Wrong Stock Pulled
	-	Cuffs	•			Contamination		Mainte	•		Part Moved	<u> </u>	_
		Heat Trea	t			Countersink		Mislabe			Positioned V	Vrong	
		Inspection	n Strip in	Tube		Cut Too Short		Misread			Power Loss/		Other

Offset

Out of Calibration

Out of Sequence

Outside Dimensions

Turning Sequence

Wave/Twist in Tube

Ripples in Bend

Torque Waves in Extrusion

Drill Holes

Drawing

Finish

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

#### **Picklist Print**

July-25-12 4:03:06 PM

Work Order ID: 88094

Parent Item:

D412-664-203

Parent Item Name: Crosstube Aft

\*88094\*

\*D412-664-203\*

**Start Date: 25/07/2012** 

**Required Date: 15/08/2012** 

Start Qty: 1.00

Required Qty: 1.00

AN6-41A

MS21042L6

Purchased

Purchased

NAS1149D0663J Purchased

No

No

No

250

Each 99.0000

\*\*

\$\frac{\*}{8}\text{N}6-41A\*

\*AN960.ID616\*

\*MS21042L6\*

Location		<u>Loc</u>	<u>Oty</u>	Loc Code				
ST340			50					
	122407		50					
ST342			49					
	120423		19				120423	
	121825		30					
		250	Each	0.0000	1	8	18	
					**		11/22402	1
		250	Each	991.0000		6	6	
					**		- 1 1 - 1	

Location	Loc Qty	Loc Code	
314	600		
122441	600		
ST300	391		
117677	25		
118384	3		
118927	48		
119075	115		
120308	200		

NCR:	res /	NO			WORK ORDER NON-	CON	FUKI	MANCE / UP	DATE			
					T					QA Closed:	Date	e: · ·
Work Orde	er:				DISPOSITION				AGAINST DE	PARTMENT	/PROCESS	•
Part N	No				Rework Scrap Use-as-is Work Order Update		N Therm	Skid-tube  Machining noforming Large Fab	Crosstube Small Fab Finishing Composite	l	Water Jet d. Eng. Coor. re/Packaging Supplier	Engineering Quality Other
Root				Descri	ption of work order update	In	itial	Act	tion	Sign &		
Cause	Da	ite Step	Qty		or Non-conformance	Chie	ef Eng	Desc	ription	Date	Verification	QC Inspector
Doc/Data Equip/Tooling												
Operator												
Material												
Setup												
Other												
Process												
Supplier												
Training												
Unapproved												
					F	AULT	CATE	GORY				
Landi	ng Gear				General					_	_	
	Bend	ling			Bend		Grain			Ovalized		Pressure/Forced
·	_	re Not Cond	entric to	O/S	BOM/Route	H	lardwa	re		Over/Under	tolerance	Temperature/Cure
	Crac				Broken/Damaged	Ш"	nspecti	on Incomplete		Part Incorre	ct	Weld
	_	ned/Crimpe	d.		Burrs	-		ions Incomplete/	Unclear	Part Lost/M		Wrong Stock Pulled
	Cuff				Contamination	$\vdash$	∕lainte			Part Moved		
•		Treat		<u> </u>	Countersink	-	∕islabe		<u> </u>	Positioned V		$\neg$
		ection Strip	in Tube		Cut Too Short	<b></b>	/lisread			Power Loss/	'Surge	Other
		es in Bend			Drill Holes	$\vdash$	Offset					
		ue Waves ir		n	Drawing	$\vdash$		Calibration				
ļ	Turn	ing Sequend	e		Finish		Out of S	equence				

Outside Dimensions

DQA:

Date: \_\_\_

Wave/Twist in Tube

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

DART AEROSPACE LTD	Work Order:	88099
Description: Crosstube High Aft (412)	Part Number:	D412-664-203
Inspection Dwg: D412-664-243 Rev: E		Page 1 of 1

Min

Max

**Required Dimension** 

	Required Dimension	IVIII	iviax	I
	Height	24.24	24.50	
	1/2 Span	53.59	53.85	
	Angle	49	52	
	Total Span	107.18	107.70	
1	Bending Passes	8		
ن د	Crushing		6%	•
<i>'02'</i>	8-5.532		·363 ts.	5,23
	66%			%
T				
	2 9 60	I W		
	2.960 2.592	۹ ۱	2.958 2.599	
	7.240		1 599	
24.400 "		!	<b>*</b>	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\
24.400				24.375
-1	ุจ			
49.4	4	i	4	9.3
				/ []]
17/1		İ	1	FH
	-	į	_1	
$\overrightarrow{t}$		T C		$A \rightarrow$
TA	W.	(1)	<b>N</b>	R
1 1	_ 53.760	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	_ 53.740 _	4
			·	
		07.500"		
•	•	•		1

Side A	mipple	Side B
TI	14	10
6.67		6.57
Comments	3	
s crushing Q	11 Pas	Ses-
14355		
B ( DIALL' D	100	ADSU.
	6.670 Comments Couchis Q	Comments  Coushing Q 11 Pas

QC15 Inspection	1040 1 1.1
Date	16 76811

Date	Change	Revised by	Approved		
7.02.06	New Issue	KJ/JM			
7.05.08	Dimensions updated per Dwg rev. D	KJ/JLM			
0.02.02	Dwg Rev updated	KJ A			
2.04.16	Added bending, crushing dimensions	KJ de	(P)		
7	7.02.06 7.05.08 0.02.02	7.02.06 New Issue 7.05.08 Dimensions updated per Dwg rev. D 0.02.02 Dwg Rev updated	7.02.06 New Issue KJ/JM 7.05.08 Dimensions updated per Dwg rev. D KJ/JLM 0.02.02 Dwg Rev updated KJ		

												DQA:	Da	te:	
NCR:	Yes	/ No				WORK ORDER NON-	100	NFORM	MANCE / UP	DATE		•		•	
											,	QA Closed:	Da	te:	
Work Ord	or:					DISPOSITION				AGAINST D	AINST DEPARTMENT/PROCESS				
Work Ord	ei.	<u></u>				Rework		Skid-tube	Crosstube	٦	Water Jet			Engineering	
Part	Nο					Scrap	1	i e	Machining	Small Fab	$\dashv$	Prod. Eng. Coor.			Quality
l 'are	140.					Use-as-is	1		noforming	Finishing	┨		e/Packaging	H	Other
NCR	No.					Work Order Update	1		Large Fab	Composite	ᅦ	1166,5161	Supplier	-	
							ر د		talke land						
Root					Descri	ption of work order update	Π	nitial	Ac	tion		Sign &			
Cause		Date	Step	Qty	(	or Non-conformance	Ch	ief Eng	Desc	cription		Date	Verificatio	n	QC Inspector
Doc/Data															
Equip/Tooling												:			
Operator			1								1				<u> </u>
Material															
Setup	L														
Other				,											
Process															
Supplier															
Training											-				
Unapproved															
							AUL	T CATE	GORY						
Land	ing (	7			_	General	_	1		_	_			_	1
	<u> </u>	Bending				Bend		Grain		_	-	Ovalized		<u> </u>	Pressure/Forced
		Centre N	ot Concer	ntric to	O/S	BOM/Route	$\vdash$	Hardwa		_		Over/Under		<u> </u>	Temperature/Cure
		Cracks			<u> </u>	Broken/Damaged	_	4	on Incomplete	<u> </u>		Part Incorred			Weld
	$\vdash$	Crushed/	Crimped.		<u> </u>	Burrs	<u></u>	1	ions Incomplete,	/Unclear		Part Lost/Mi	ssing		Wrong Stock Pulled
	<u> </u>	Cuffs				Contamination		Mainte		<u></u>		Part Moved			
		Heat Trea				Countersink		Mislabe		<u> </u>		Positioned Wrong			1
1		Inspectio	n Strip in	Tube	1	Cut Too Short	1	Misread				Power Loss/	Surge		Other

Offset

Out of Calibration

Out of Sequence

Outside Dimensions

Ripples in Bend

Turning Sequence

Wave/Twist in Tube

Torque Waves in Extrusion

Drill Holes

Drawing

Finish

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

Item	Qty -243	Part Number	Description
1	х	D412-664-243	CROSSTUBE ASSEMBLY (412 HIGH AFT)
2	1	D6009-129	CROSSTUBE
3	2	D3595-063-570	RUBBER CUSHION
4	1	D2896-1	SUPPORT
5	2	D3189-1	CHAFING SHIELD
6	2	D2856-600-1009	ABRASION STRIP
7	4	MS21920-28	CLAMP
8	2	MS21920-30	CLAMP (OR MS21920-32)
9	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTROMBELL SPEC. 299-947-100, TYPE II, CLASS 2 ADHESIVE)

#### **GENERAL NOTES:**

D

1) MATERIAL: MANUFACTURED FROM D6009-129

FINISHED LENGTH = 124.100±0.020 (BEFORE BENDING/TRIMMING)

2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1 PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2 PAINT OUTSIDE PER DART QSI 005 4.2

- TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED. 3)
- UNITS: INCHES UNLESS OTHERWISE NOTED.
- BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
- IDENTIFICATION: SCRIBE DART PART NUMBER "D412-664-243" AND BATCH NUMBER ON INSIDE OF CUFF USING VIBRATING STYLUS
- WEIGHT: 47.0 lbs (PER IIN-D212-664)
- PART IS SYMMETRIC ABOUT CENTERLINE.
- RUN CUTTER OFF PART. BLEND OUT EDGE LONGITUDINALY, TRANSITION SHOULD BE SMOOTH.
- 10) BEND PROGRESSIVELY WITH A MINIMUM OF 8 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.
- 11) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- 12) INSTALL D2896-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 TO THE SURFACE OF D2896-1 THAT WILL BE IN CONTACT WITH THE CROSSTUBE PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 13) INSTALL MS21920-30 CLAMPS (OR -32) WITH D3595-063-570 RUBBER CUSHIONS TO SECURE THE D2896-1 SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMPS ARE OPPOSITE OF CROSSTUBE SUPPORT
- 14) INSTALL D2856-600-1009 ABRASION STRIPS WITH A 0.13 REF GAP ON BOTTOM SIDE OF CROSSTUBE PER QSI 035.
- 15) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES. NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 16) TORQUE CLAMPS 80 TO 100 IN; LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

SHOP COPY RETURN TO ENGINEERING UNCONTROLLED COPY SUBJECT TO AMENDMENT WITHOUT NOTICE WORK ORDER NO 88094 MLJ 12/07/21

D

E	REORG TO CUP PAR 08- C8-3 & 0	REFORMATIREVISE GENERAL NOTES: REORGANIZED VIEWS AND REFORMATTED DRAWING TO CURRENT STANDARDS; RELOCATED FLAG #6 PER PAR 08-046 (ZN 46-3); ADD TOLERANCE (ZN B6-3, C4-3, C8-3 & C5-3); MOYED TURNING DETAIL & UPDATED TOLERANCE TO SHEET 4.									
D	REMO	/E D2732-058	PH	07.03.09							
С	REMO	МВ	06.10.27								
В	ADD H SKIDTI		OMPATABILITY WITH BHT/AA	PH	05.02,04						
Α	NEW IS	SSUE		PH	01.10,17						
REV.			DESCRIPTION	BY	DATE						
DESIGN	ı	PH	DART AEROSP	ACE	ACE LTD						
DRAWN		RF	HAWKESBURY, ONTAR								
CHECKED 97			DRAWING NO.	REV. E							

MFG. APPR. D412-664-243 APPROVED TITLE SCALE CROSSTUBE ASSEMBLY (412 HI AFT) DE APPR NTS COPYRIGHT © 2001 BY DART AEROSPACE LTD

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FUSIO FOR ANY PURPOSE OR COPYED OR COMMERCIATED TO ANY OTHER PERSON WITHOUT DATE 09.09.30

NCR:	ICR: Yes / No WORK ORDER NON-CONFORMANCE / UPDATE															
				•							QA Closed:	Date:	•			
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		Bending Centre Not Concentric to O/S Cracks Crushed/Crimped Cuffs Heat Treat Inspection Strip in Tube			o/s	Bend BOM/Route Broken/Damaged Burrs Contamination Countersink Cut Too Short		Grain Hardware Inspection Incomplete Instructions Incomplete/Unclear Maintenance Mislabeled Misread			Ovalized Over/Under Part Incorred Part Lost/Mi Part Moved Positioned V Power Loss/	ct ssing Vrong	Pressure/Forced Temperature/Cure Weld Wrong Stock Pulled Other			
	Ripples in Bend Drill Holes Offset															

Out of Calibration

Out of Sequence

Outside Dimensions

DQA:

Date:

Turning Sequence

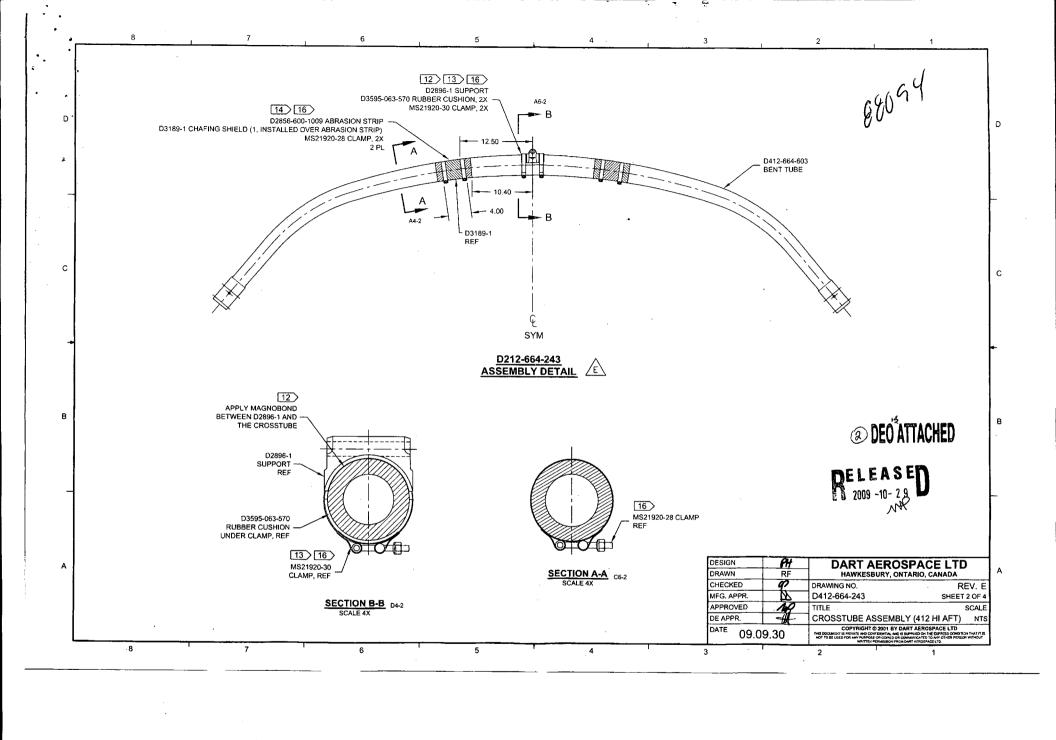
Wave/Twist in Tube

Torque Waves in Extrusion

Drawing

Finish

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G



NCR:	Yes	/ No				WORK ORDER NON-	COI	NFORN	•						
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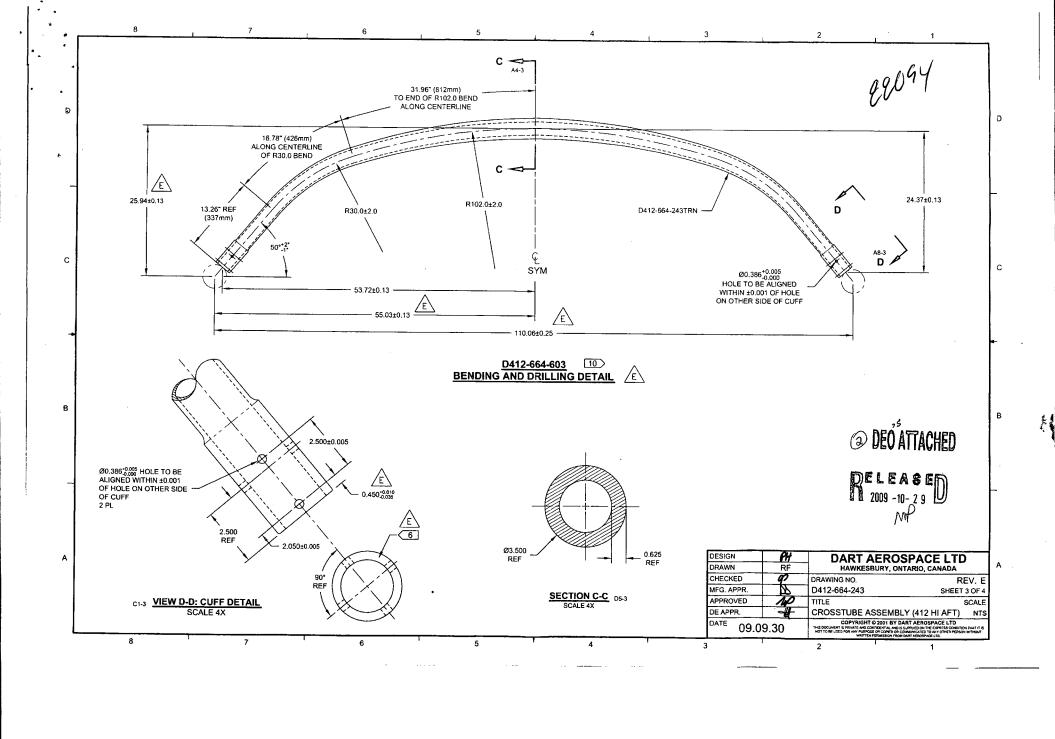
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Turning Sequence

Wave/Twist in Tube

Finish

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											DQA:	Date:	
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		Ripples in	Bend			Drill Holes		Offset					

Out of Calibration

Out of Sequence

Outside Dimensions

Turning Sequence

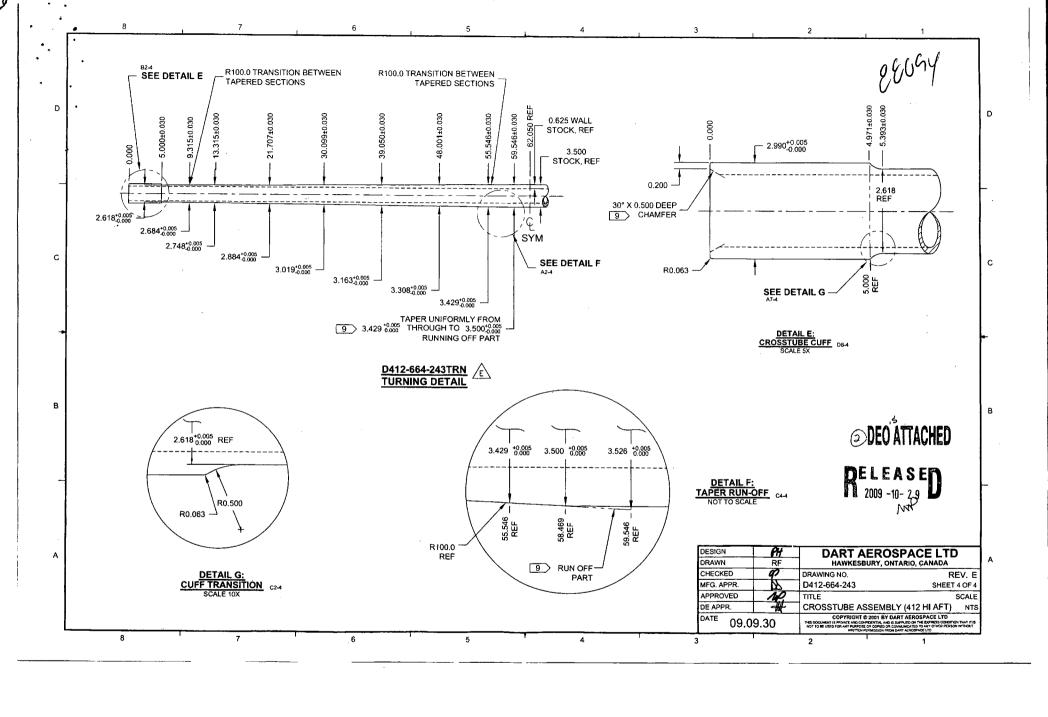
Wave/Twist in Tube

Torque Waves in Extrusion

Drawing

Finish

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G



NCR: Y	es / No				WORK ORDER NON-	CONF	-UKIN	MAINCE / UP	DATE	QA Closed:	Date	e: • •	
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1	Turning Sequence   Finish   Out of Sequence												

Outside Dimensions

DQA:

Date:

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

Wave/Twist in Tube

DRAWING NO.	TITLE		REV. E	DART AEROSPACE LTD	D.E.O. NO.	SHEET NO.	SCALE
D412-664-24	3 CROSSTU	BE ASSEMBLY		<b>ENGINEERING ORDER</b>	D412-664-243-E-1	SHEET 1 OF 2	NTS
DRAWN	_ <u>\\</u>	CHECKED	W	MFG. APPR.	APPROVED MP	DE APPR:	
DATE 1	1.03.31	DATE 11/2	03.31	DATE //.03.31	DATE 11/03:31	DATE 11.03.31	

**PURPOSE:** 

REMOVED ABRASION STRIP IN FAVOR OF A THIN LAYER OF PROSEAL 890.

#### **CHANGE:**

#### PARTS LIST IS AMENDED AS FOLLOWS:

#### IS:

Item	Qty -243	Part Number	Description
6	0	D2856-600-1009	ABRASION STRIP

#### WAS:

		L	
6	2	D2856-600-1009	ABRASION STRIP
	•		

### NOTES 2 AND 14, SHEET 1 ARE AMENDED AS FOLLOWS:

#### <u>IS:</u>

2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1 PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2

MASK UNDERSIDE OF CROSSTUBE AS SHOWN (HATCHED AREA)

PAINT OUTSIDE PER DART QSI 005 4.2

AFTER PAINTING, APPLY CLEAR COAT ON HATCHED AREA

14) APPLY A THIN COAT OF PROSEAL 890 ON INSIDE CONCAVE SURFACE OF D3189-1 CHAFING SHIELD AND LET CURE PER MANUFACTURER'S INSTRUCTIONS. INSTALL PROSEALED D3189-1 CHAFING SHIELD ONTO CROSSTUBE BY APPLYING A THIN COAT OF PROSEAL 890 ONTO CROSSTUBE. BE SURE TO ELIMINATE ANY AIR GAPS.

#### WAS:

- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1 PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2 PAINT OUTSIDE PER DART QSI 005 4.2
- 14) INSTALL D2856-600-1009 ABRASION STRIPS WITH A 0.13 REF GAP ON BOTTOM SIDE OF CROSSTUBE PER QSI 035.

24094

PELEASED WAS EN

NCR:	Yes	/ No				WORK ORDER NON-	COI	NFUKI	VIANCE / UP	DATE	QA Closed:	Date	
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	-	Heat Trea	·+			Countersink	-	Mislabe		<u></u>	Positioned		
	_	Inspection		Tube		Cut Too Short	$\vdash$	Misrea			Power Loss		Other
	-	Ripples in	-			Drill Holes	$\vdash$	Offset	•	L	Ti ower ross	, suige	Jouren
				xtrusio	n	Drawing	$\vdash$	4	Calibration				
		Torque Waves in Extrusion Turning Sequence				Finish		Out of Sequence					

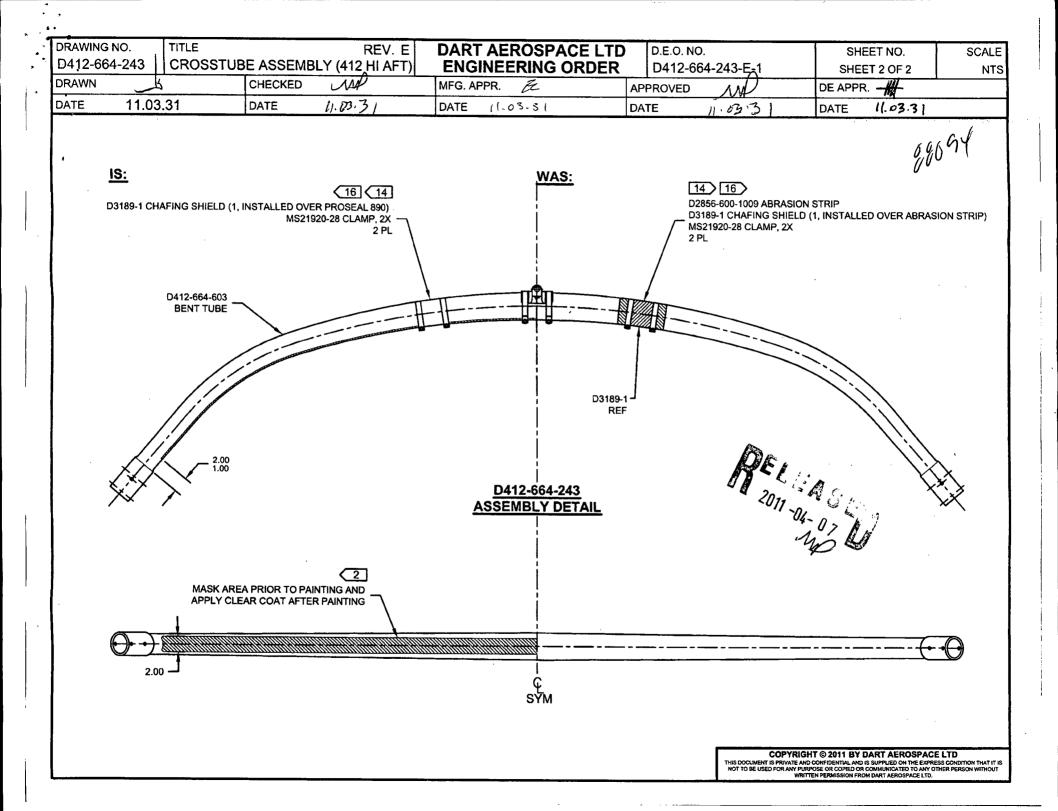
Outside Dimensions

DQA:

Date:

Wave/Twist in Tube

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NCR:	⁄es	/ No				WORK ORDER NON-	COI	NFORM	MANCE / UPI	DATE			,
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Work Ord	er:			, , · · ·		DISPOSITION	<b>_</b>			_	EPARTMENT,	<b>'PROCESS</b> Water Jet □	
Part No					Rework Scrap Use-as-is Work Order Update	Skid-tube Crosstube  Machining Small Fab  Thermoforming Finishing  Large Fab Composite			Prod Rec/Stor	Engineering Quality Other			
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	ding Gear  Bending Centre Not Concentric to O/S Cracks Crushed/Crimped. Cuffs Heat Treat Inspection Strip in Tube Ripples in Bend			Tube		Bend BOM/Route Broken/Damaged Burrs Contamination Countersink Cut Too Short Drill Holes		Grain  Hardware  Inspection Incomplete  Instructions Incomplete/Unclear  Maintenance  Mislabeled  Misread  Offset  Out of Calibration			Ovalized Over/Under Part Incorred Part Lost/Mi Part Moved Positioned V Power Loss/	ct ssing Vrong	Pressure/Forced Temperature/Cure Weld Wrong Stock Pulled Other
	1	Torque Waves in Extrusion Drawin				Intamilia	1	Jour or C	Landration				

Out of Sequence

Outside Dimensions

DQA:

Date:

Turning Sequence

Wave/Twist in Tube

Finish

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

DRAWING		TITLE		REV. E	DART AEROSPACE L	TD D.E.O. NO.	SHEET NO.	SCALE
D412-66	64-243	CROSSTL	BE ASSY (4	412 HI AFT)	ENGINEERING ORDE	<b>R</b> D412-664-243-E-2	SHEET 1 OF 1	NTS
DRAWN	P		CHECKED	ASS	MFG. APPR.	APPROVED M	DE APPR.	
DATE	11.09.	)7	DATE	11.09.19	DATE ((.09.19	DATE 11.09.19	DATE 11. 99.19	

**PURPOSE:** 

REPLACE MAGNOBOND WITH 3M DP460 SCOTCH-WELD EPOXY ADHESIVE

### 24094

#### CHANGE:

IS:

Item	Qty -243	Part Number	Description
9	A/R	SCOTCH-WELD DP460	EPOXY ADHESIVE, 3M SCOTCH-WELD

#### WAS:

9	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947-100, TYPE II, CLASS 2 ADHESIVE)

NOTE 12 & 16, SHEET 1 IS AMENDED AS FOLLOWS:

#### 18

- 12) INSTALL D2896-1 CENTER SUPPORT USING A 0.04" TO 0.07" THICK LAYER OF SCOTCH-WELD DP460 PER QSI 015. LET CURE FOR 24 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 16) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING. PRIOR TO PACKAGING, RE-CHECK TORQUE ON CLAMPS AFTER ADHESIVE HAS CURED FOR 24 HOURS.

#### WAS:

- 12) INSTALL D2896-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 TO THE SURFACE OF D2896-1 THAT WILL BE IN CONTACT WITH THE CROSSTUBE PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 16) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.



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WRITTEN PERMASSION FROM DART AEROSPACE LTD.

										DQA:	Date:	
NCR:	Yes / No				<b>WORK ORDER NON-</b>	100	VFORM	MANCE / UPDATE		•		,
										QA Closed:	Date:	• •
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Part No					Rework Scrap Use-as-is Work Order Update	Skid-tube Crosstube  Machining Small Fab  Thermoforming Finishing  Large Fab Composite		l Fab	Water Jet Prod. Eng. Coor. Rec/Store/Packaging Supplier		Engineering, Quality Other	
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Misread

Out of Calibration

Out of Sequence

Outside Dimensions

Offset

Other

Power Loss/Surge

Turning Sequence

Wave/Twist in Tube

Ripples in Bend

Inspection Strip in Tube

Torque Waves in Extrusion

Cut Too Short

Drill Holes

Drawing

Finish

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13. 1 = Px 13 x 2.961 /2 x 1.676 = 11.484.P 13. 1 = Px 13 x 2.961 /2 x 1.675 = 14.651,P M.S. = 14.651/11,484-1 = 6.27 1. 10te will brock at rucker beam contest before area

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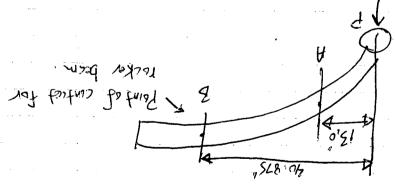
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Acceptability of 8% crushing AT END OF ISEND

462-699-7160 to GNHSNZI

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### LIQUID PENETRANT TEST REPORT

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ADDRESS	1270 Al	BENDEEN	-		PO/WO No.	17683		
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DEVELOPER	SK\$ 52	MINIMUM DWELL TIM		MIN.	LIGHT METER S/N	1098866	СА	L DUE DATE 08/25/13
DEVELOPER TYPE TEST SURFACE	✓ Non Aqu	JEOUS AQUEOUS	[] Dr	Υ			**********	,
SURFACE CONDITION	N 🔲 As Grou	ND AS	WELDED	<u> </u>	MACHINED	☐ SHOT BLASTED		CLEAN BARE METAL
SURFACE TEMPERAT	URE 🗆 < - 4°C/ 2		C/ 20°F TO 1			✓ 10°C/50°F TO		□ > 52°C/125°F
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			Perfection - And Control Co			1/120	75	
that all descriptions, commen representations or warranties data or other information pro Standard of Care	nts and expressions of opins.  S. Acuren Group Inc. is not ovided by Acuren Group Involved, Acuren Group Incovided, Acuren Group Inc	nion reflect the opinions or obser ot assuming any responsibilities of nc. In no event shall Acuren Gro	rvations of / curen of the own - loperd oup Inc.'s liability i	Group Inc. b ator and the c in respect of t	eased on information and ass owner/operator retains comp the services referred to herei	ssumptions supplied by the ow uplete responsibility for the en in exceed the amount paid for	ener/operator and are no gineering, manufacture, r such services.	uested services. It is expressly understooc of intended nor can they be construed as , repair and use decisions as a result of th ality. No other warranty, expressed or
SIGNATURES		<b>.</b>	A STATE OF THE STA		1		***************************************	
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_		PRINT			SIGNATURE	REPOR		
TECHNICIAN (SIGNATI	URE).	1 8 4 W 21				REVIEW	VED BY:	(Samuel Company)
NAME (PRINT):	Make	1 <sup>ST</sup> TECHNICIAN		-	2 <sup>NO</sup> TECHNICIAN		NAME	INITIALS
	CGSB LE	EVEL SNT LEVE		CGSB LEV	/EL SNT L	EVEL		

. NÇR: Yes / No WORK ORDER NON-CONFORMANCE / UPDATE

DQA:	Date:	

, 	· 						•		QA Closed:	Da	te:
Work Orde	er:				DISPOSITION			AGAINST DE	PARTMENT	/PROCESS	<del></del>
Part N	lo				Rework Scrap Use-as-is Work Order Update THIS 似っぬいづ	i 1	Skid-tube Machining noforming Large Fab	Crosstube Small Fab Finishing Composite	1	Water Jet d. Eng. Coor. re/Packaging Supplier	Quality Other
Root				Descri	ption of work order update	Initial	Ad	ction	Sign &		
Cause	Date	Step	Qty	(	or Non-conformance	Chief Eng	Desc	cription	Date	Verificatio	n QC Inspector
Doc/Data Equip/Tooling Operator Material	14417	(Q)	Pichagad	KIT 1 WITH	S NOW CHATLA SHIELD	12/8/13		che asq			
Setup Other Process Supplier Training	12/3/23	190	ì		JORK NEEDS COPY OF 29 Rev. A.	DAG 1.22	Add Copy (	of DSI to Paperwork			
Unapproved		l	1				PATTERLUP				
					F	AULT CATE	GORY				
Landir	ng Gear				General				_		
	Bending Centre No	ot Conce	ntric to	O/S	Bend BOM/Route Broken/Damaged	Grain Hardwa			Ovalized Over/Under		Pressure/Forced Temperature/Cure Weld
<b> </b>	Crushed/	Crimpod		-	Burrs	<del></del>	ion Incomplete tions Incomplete	// / / / / / / / / / / / / / / / / / / /	Part Incorre		<del>  </del>
	Cuffs	Cimpeu		-	Contamination	<del>-</del>	tions incomplete enance	Jonciear	Part Lost/M	_	Wrong Stock Pulled
<u> </u>	Heat Trea	at		-	Countersink	Mislabe			Positioned		•
<b> </b>	Inspectio		Tuhe	-	Cut Too Short	Misrea			Power Loss,	- ·	Other
1	Ripples in	•			Drill Holes	Offset	<b>-</b>	<u> </u>	J. 04461 5033/	Juigo	Louici
	Torque V		Extrusio	n H	Drawing	H-1	Calibration				
	Turning S			<u> </u>	Finish	H	Sequence			· · · · · · · · · · · · · · · · · · ·	
	Wave/Tw	•			Folio	<del></del>	e Dimensions				
<u> </u>						1 1 1 1 1 1 1			<del></del>	· ·	

												DQA:	Date:	
NCR: Y	es .	/ No					WORK ORDER NON-C	ON	NFORM	MANCE / UPDAT	E	-		
		****				_						QA Closed:	Date:	4
Work Orde	er:						DISPOSITION			,	AGAINST DE	PARTMENT/	PROCESS	
Part N	10						Rework Scrap		1	Machining S	rosstube Small Fab		Water Jet	Engineering Quality
NCR N	No	<del></del>					Use-as-is Work Order Update 次 でから めいし			~——	Finishing omposite	Rec/Stor	e/Packaging Supplier	Other
Root					Descr	rip	tion of work order update	Ī	nitial	Action		Sign &		
Cause	_	Date	Step	Qty		01	r Non-conformance	Ch	ief Eng	Description	on .	Date	Verification	QC Inspector
oc/Data quip/Tooling Operator Material etup Other Process upplier Training	- Company	7/8/14	230	-	MADE	ill Y!	TO VER YAR MAIL MAIL MAY	12	DAS 12 18/27	15 minor and p approved to D31 with accepted a	Liship to Change auts Stir Rev. B. Mevations	120508	Hortra	Tropspa
Landii	na Ga							AUL	T CATE	GORY				
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	_	Centre No	ot Concer	ntric to (	<sub>0/s</sub>	-	BOM/Route	$\vdash$	Hardwa	re		Over/Under	tolerance	Temperature/Cure
	_	Cracks		,	-/-  -		Broken/Damaged	$\vdash$	4	on Incomplete		Part Incorred	<del></del>	Weld
	$\Box$	rushed/0	Crimped.		r		Burrs		1	ions Incomplete/Uncl	ear	Part Lost/Mi	<b>├</b>	Wrong Stock Pulled
:		Cuffs	•			٦	Contamination		Mainte			Part Moved	- L.	<b>-</b>
	F	leat Trea	t				Countersink		Mislabe	eled		Positioned V	Vrong	-
		nspection	n Strip in	Tube	•		Cut Too Short		Misread			Power Loss/	Surge	Other
		Ripples in	Bend		Γ		Drill Holes		Offset		-	-		
	T	orque W	aves in E	xtrusio	n [	$\neg$	Drawing		Out of	Calibration				

Out of Sequence

Outside Dimensions

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

Turning Sequence

Wave/Twist in Tube

Finish

D412-664-243	CROSSTUBE ASSEMBLY (41		GINEERING ORDER	D412-664-243-E-4	SHEET 1 OF 3	SUALE NTS
DRAWN.	CHECKED	5 MFG.	. APPR.	APPROVED	DE APPR.	
DATE . 12.08.	21 DATE 12.6	ie 27 DATE		DATE	DATE	

#### PURPOSE:

REMOVED ABRASION STRIP IN FAVOR OF A THIN LAYER OF PROSEAL 890. THIS ENGINEERING ORDER SUPERCEDES DEO D412-664-243-E-1

#### CHANGE:

PARTS LIST IS AMENDED AS FOLLOWS:

#### <u> IS:</u>

Item	Qty -243	Part Number	Description
6	0	D2856-600-1009	ABRASION STRIP

#### WAS:

6	2	D2856-600-1009	ABRASION STRIP

#### NOTES 2, 14, AND 16 ON SHEET 1 ARE AMENDED AS FOLLOWS:

#### <u>IS:</u>

2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1

PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2 MASK UNDERSIDE OF CROSSTUBE AS SHOWN (HATCHED AREA)

PAINT OUTSIDE PER DART QSI 005 4.2

AFTER PAINTING, APPLY CLEAR COAT ON HATCHED AREA

- 14) APPLY A THIN COAT OF PROSEAL 890 ON INSIDE CONCAVE SURFACE OF D3189-1 CHAFING SHIELD AND LET CURE PER MANUFACTURER'S INSTRUCTIONS. INSTALL PROSEALED D3189-1 CHAFING SHIELD ONTO CROSSTUBE BY APPLYING A THIN COAT OF PROSEAL 890 ONTO CROSSTUBE. BE SURE TO ELIMINATE ANY AIR GAPS
- 16) TORQUE CLAMPS ON D2896-1 SUPPORT 80 TO 100 IN-LB. **TORQUE CLAMPS ON D3189-1 CHAFING SHIELD 40 TO 50 IN-LB.** ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

#### WAS:

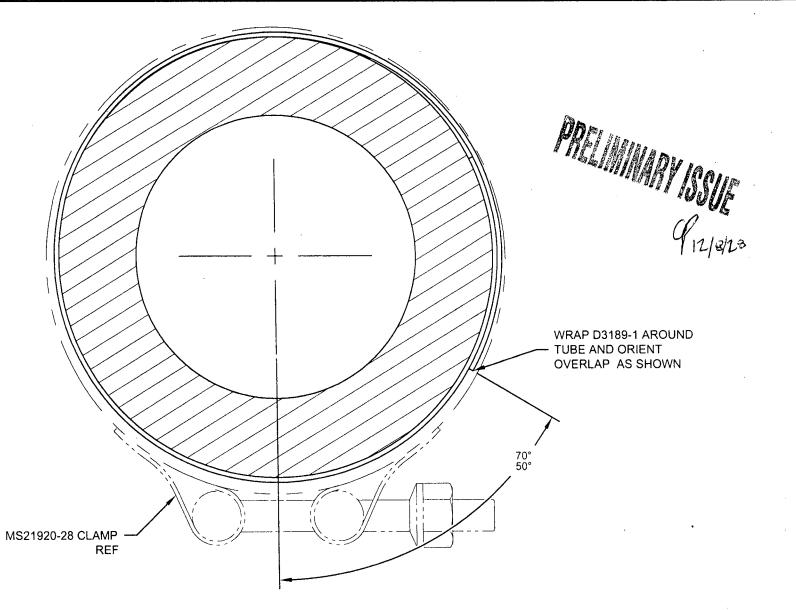
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
  PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
  PAINT OUTSIDE PER DART QSI 005 4.2
- 14) INSTALL D2856-600-1009 ABRASION STRIPS WITH A 0.13 REF GAP ON BOTTOM SIDE OF CROSSTUBE PER QSI 035.
- 16) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

# PREMIMARY ISSUE

P12/11/29

-,-										
DŖÁWIŅ D412-6		TITLE CROSSTU	BE ASSEMI	REV. E BLY (412 HI AFT)	DART AEROSI ENGINEERING	PACE LTD	D.E.O. NO. D412-664-2	243-F-4	SHEET NO. SHEET 2 OF 3	SCALE NTS
DRAWN	q.	7	CHECKED	A	MFG. APPR.				<del></del>	1413
DATE	12.08	.21	DATE	12.06.27	DATE		<del></del>			
	12.08	.21  AFING SHIELD (1,  D412-664-603 BENT TUBE  2.00 1.00	INSTALLED ON MS2		DATE	D3189-1 REF	D3189- MS219/ 2 PL	600-1009 ABRASION S 1 CHAFING SHIELD (1 20-28 CLAMP, 2X	DE APPR.  DATE  STRIP I, INSTALLED OVER ABRASI  (4)28	ON STRIP)
	2.0	4								•
					sŸı	М				
								THIS DOCUMENT IS PRIVATE AND I	T © 2012 BY DART AEROSPACE CONFIDENTIAL AND IS SUPPLIED ON THE EXPRE OSE OR COPIED OR COMMUNICATED TO ANY OIL PERMISSION FROM DART AEROSPACE LTD.	

DRAWIN	Ģ NO.	TITLE		REV. E	DART AEROSPACE LTD	D.E.O. NO.	SHEET NO.	SCALE
D412-6	64-243	CROSSTUB	E ASSEMBL	Y (41⊉ HLAFT)	<b>ENGINEERING ORDER</b>	D412-664-243-E-4	SHEET 3 OF 3	NTS
DRAWN	9		CHECKED		MFG. APPR.	APPROVED	DE APPR.	
DATE	12.08.	21	DATE	12.08.27	DATE	DATE	DATE	



SECTION A-A
CHAFING SHIELD DETAIL VIEW ROTATED, NOT TO SCALE

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NCR:	•	Yes	/	No

NCR: Y	es / No				WORK ORDER NON-C	O	<b>IFORM</b>	NAI	CE / UPDATE			
										QA Closed:	Date:	
- Work Orde	r:				DISPOSITION	,			AGAINST DE	PARTMENT/		
Part N	0.			·	Rework Scrap		N	Skid- ⁄Iachi	ning Small Fab	l	Water Jet	Engineering Quality
NCR N	lo				Use-as-is Work Order Update		Therm		ming Finishing Fab Composite	Rec/Store	e/Packaging Supplier	Other
Root				Descri	ption of work order update		nitial		Action	Sign &		
Cause	Date	Step	Qty	. (	or Non-conformance	Ch	ief Eng		Description	Date	Verification	QC Inspector
oc/Data quip/Tooling perator Material etup Other crocess upplier	12/3/2°	230		MADE INST PREL DYIZ	TO DSIST ROUPCI TO DSIST ROUPCI THL PER ATTACHED LIM CUPY OF 1664-243-E-4 16NED AND DITTED		Da 1/15/119	P A ha	DK to INSTALL  P SHIP CROSSTUBE  IADE TO DBIEST REV.  CI. CHANGE IS  INVER and parts  We been approved to	19 02 98		
raining	_			12/	8/28			s). GC	SIBS Feu B with cepted deviation			
Inapproved	1		.1	l	·	AUL	T CATE			<u> </u>		
Landin	ng Gear				General							
	Bending Centre N Cracks Crushed Cuffs Heat Tre Inspection Ripples i Torque N Turning	on Strip in n Bend Waves in Sequence	Tube Extrusio		Bend BOM/Route Broken/Damaged Burrs Contamination Countersink Cut Too Short Drill Holes Drawing Finish		1	on Incions II nanc led	etion	Ovalized Over/Under Part Incorred Part Lost/Mi Part Moved Positioned V Power Loss/	st ssing	Pressure/Forced Temperature/Cure Weld Wrong Stock Pulled Other
i	Wave/T	wist in Tu	be	i	Folio	1	Outside	Dime	nsions			

Date:



## Non-Conformance Report

Wednesday, August 29, 2012

Details	315					
Raised Date	Status		Owner			Number
8/29/2012	Op	en	Sm	nith, Patrick Robert		NCR12-1760
Target Date	Standard					Severity
9/15/2012						MINOR
Source				Audit		
	Quality Inspec					
Raised By Person	1	Raised Aga		nent or Supplier)	Fa	ault Category
Downing, Eri	С		Engineeri	ng\Design	***************************************	General\Documentation/Data
Details						
after installing D3189-1 the drawing is not match	chafing shiel	d's on work alled up on	orders B8809 the ICA.	94, B88093, B86985	, В86986	it was found that the installtion on
Product						
				Root Cause		
Document				1100t Gause		
Closed By	Closed Date	•	Resolution			
	***					
	<u> </u>					
Corrective Action		1.518	3		Class	sed By
Target Date	Owner			Closed Date	Clos	sea by
9/15/2012		Petsche, Mi	ke			
Details				<u> </u>		
			_		77.64	ATTRICKE WE WAS A FAIR TO
Actions				Tarrest Date		Completed Date
Number	Owner	·····		Target Date Response		Completed Date
Details	Petsche, M	iko		9/8/2012		
1				3/0/2012		
open a PAR to have the the ICAPAR #_	drawings ma	atch what is	called up on			
2	Lacelle, Lin	da		8/31/2012		
rework all the D412-664	-203 cross tu	bes in stocl	K			

Verification &	Review		
Target Date 9/2/2012	Owner	Closed Date	Closed By
Details			

Number	Owner	Target Date	Completed Date
Details		Response	